

**Dr. Duke's Phytochemical and Ethnobotanical Database**

**Chemicals Found in *Crataegus laevigata***

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
30	(+)-CATECHIN	Flower	--	--		
30	(+)-CATECHIN	Leaf	--	--		
30	(+)-CATECHIN	Tissue Culture	--	--		
30	(+)-CATECHIN	Bud	--	--		
30	(+)-CATECHIN	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
38	(-)-EPICATECHIN	Fruit	--	--		
38	(-)-EPICATECHIN	Flower	--	--		
38	(-)-EPICATECHIN	Leaf	--	--		
38	(-)-EPICATECHIN	Shoot	--	--		
38	(-)-EPICATECHIN	Bud	--	--		
38	(-)-EPICATECHIN	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	2,,3,3',4,4',5,7-HEPTAHYDROXYFLAVANBIOSIDE	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	2-ALPHA-HYDROXY-OLEANOLIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	2-PHENYLCHROMONE	Flower	--	--		
0	5-HYDROXY-INDOLE-ACETIC-ACID	Shoot	--	--		
15	5-HYDROXYTRYPTAMINE	Shoot	--	--		
0	ACANTOLIC-ACID	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ACANTOLIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
19	ACETYL-CHOLINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
19	ACETYL-CHOLINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	ACETYL-VITEXIN-4'-RHAMNOSIDE	Fruit	--	--		
0	ACETYL-VITEXIN-4'-RHAMNOSIDE	Branches	--	--		Jim Duke's personal files.
11	ADENINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
11	ADENINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
28	ADENOSINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
28	ADENOSINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
33	AESCULIN	Shoot	--	--		
33	AESCULIN	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
5	ALUMINUM	Fruit	8	29	-0.21508468192276714	
0	AMINES	Plant	--	--		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	AMINOPURINE	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
8	AMYGDALIN	Leaf	1500	1500	-0.7071067811865472	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
101	APIGENIN	Fruit	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
101	APIGENIN	Leaf	--	--		
101	APIGENIN	Bud	--	--		
0	APIGETRIN	Leaf	--	--		
0	APIGETRIN	Bud	--	--		
112	ASCORBIC-ACID	Fruit	24	85	-0.2792039610917021	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
112	ASCORBIC-ACID	Leaf	166.4	1800	-0.27690303367535113	
0	ASH	Fruit	8091	29000	-0.7163626815965894	
53	BETA-CAROTENE	Fruit	1.4	5	-0.14113571921676207	
1	BETA-PHENETHYLAMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
1	BETA-PHENETHYLAMINE	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
1	BETA-PHENETHYLAMINE	Flower	--	--		
47	BETA-SITOSTEROL	Flower	6500	7800	0.9253646230843826	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
47	BETA-SITOSTEROL	Leaf	5100	6200	2.2672781336507843	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	CADMIUM	Flower	--	--		
3	CADMIUM	Fruit	--	--		
102	CAFFEIC-ACID	Shoot	--	--		
102	CAFFEIC-ACID	Leaf	--	--		
102	CAFFEIC-ACID	Bud	--	--		
102	CAFFEIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
102	CAFFEIC-ACID	Flower	--	--		
28	CALCIUM	Fruit	1554	5570	0.3954571881842723	
0	CARBOHYDRATES	Fruit	256122	918000	0.722547106992137	
43	CATECHIN	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	CATECHIN-TANNINS	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	CERYL-ALCOHOL	Bark	--	--		
77	CHLOROGENIC-ACID	Bark	--	--		
77	CHLOROGENIC-ACID	Bud	--	--		
77	CHLOROGENIC-ACID	Plant	--	--		
77	CHLOROGENIC-ACID	Flower	--	--		
77	CHLOROGENIC-ACID	Fruit	--	--		
77	CHLOROGENIC-ACID	Leaf	--	--		
77	CHLOROGENIC-ACID	Shoot	--	--		
20	CHOLINE	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
20	CHOLINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
20	CHOLINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
24	CHROMIUM	Fruit	0.5	1.7	-0.26885440473667177	
23	CITRIC-ACID	Fruit	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
2	COBALT	Fruit	0.6	2	-0.29299669899909336	
12	COPPER	Flower	--	--		
12	COPPER	Fruit	--	--		
0	CRATAEGOLIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	CRATAEGOLIC-ACID	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	CRATAEGUS-BIFLAVANOID-B-2	Fruit	--	--		
0	CRATAEGUS-BIFLAVANOID-B-5	Fruit	--	--		
0	CRATAEGUS-BIFLAVANOID-C-1	Fruit	--	--		
0	CROMIUM	Flower	--	--		
0	CROMIUM	Fruit	--	--		
3	CYNAROSIDE	Flower	--	--		
3	CYNAROSIDE	Leaf	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	DIMETHYL-AMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
2	DIMETHYL-AMINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
20	DOPAMINE	Shoot	--	--		
0	EO	Fruit	279	2500	-0.7713693690086117	
40	EPICATECHIN	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
40	EPICATECHIN	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
11	EPINEPHRINE	Leaf	--	--		
11	EPINEPHRINE	Flower	--	--		
0	ERIDICTOL-GLYCOSIDE	Plant	--	--		Schussler, M., Fricke, U., Nikolov, N., and Holzl, J. 1991. Comparison of the Flavonoids Occurring in Crataegus species and Inhibition of 3',5'-Cyclic Adenosine Monophosphate Phosphodiesterase. Plant Medica 57: Suppl Issue 2. p.A-133.
29	ESCOLIN	Fruit	--	--		
29	ESCOLIN	Bark	--	--		Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ETHANOLAMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	ETHANOLAMINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ETHYL-AMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	ETHYL-AMINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	FAT	Fruit	10881	39000	-0.34337322683955546	
15	FIBER	Fruit	108000	108000	-0.31778652128419577	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	FIBER(CRUDE)	Fruit	--	108000	-0.4250705302983724	
0	FIBER(DIETARY)	Fruit	--	386000	0.11897072890689903	
0	FLAVONOIDS	Shoot	10000	20000	-0.47676335348397514	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
7	GLUCOSE	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
1	GUANINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	GUANINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
30	HYPEROSIDE	Shoot	--	--		
30	HYPEROSIDE	Leaf	--	--		
30	HYPEROSIDE	Plant	--	10000	-0.707106781186548	
30	HYPEROSIDE	Bark	--	--		
30	HYPEROSIDE	Fruit	--	--		
30	HYPEROSIDE	Branches	--	--		
30	HYPEROSIDE	Flower	--	--		
6	IRON	Fruit	--	--		
0	ISOAMYL-AMINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ISOAMYL-AMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	ISOBUTYL-AMINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ISOBUTYL-AMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	KILOCALORIES	Fruit	2890	2890	-1.1703353924398954	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	L-EPICATECHOL	Fruit	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
7	LAURIC-ACID	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	LEAD	Fruit	--	--		
0	LEAD	Flower	--	--		
0	LEUCOANTHOCYANIDIN	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
27	LINOLEIC-ACID	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	LINOLENIC-ACID	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	LIPASE	Seed	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
21	LUPEOL	Bark	--	--		
78	LUTEOLIN	Bud	--	--		
78	LUTEOLIN	Fruit	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
78	LUTEOLIN	Leaf	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	LUTEOLIN-3',7-DIGLUCOSIDE	Leaf	--	--		
0	LUTEOLIN-3',7-DIGLUCOSIDE	Bud	--	--		
65	MAGNESIUM	Fruit	262	940	-0.5509172813412117	
14	MANGANESE	Flower	--	--		
14	MANGANESE	Fruit	0.4	1.4	-0.39430607258501055	
6	MASLINIC-ACID	Shoot	--	--		
0	NEOATEGOLIC-ACID	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	NEOTEGOLIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
39	NIACIN	Fruit	--	--		
0	NONACOSAN-10-OL	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	NOREPINEPHRINE	Shoot	--	--		
0	NOREPINEPHRINE	Leaf	--	--		
0	NOREPINEPHRINE	Flower	--	--		
0	O-METHOXY-BETA-PHENETHYLAMINE	Flower	--	--		
0	O-METHOXY-BETA-PHENETHYLAMINE	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	O-METHOXY-PHENYLETHYLAMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	OCTACOSANE	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
64	OLEANOLIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
25	OPC	Shoot	10000	30000		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	ORIENTIN-GLYCOSIDES	Fruit	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
9	OXALIC-ACID	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
9	OXALIC-ACID	Bark	--	--		
13	PALMITIC-ACID	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
13	PALMITIC-ACID	Bark	--	--		
24	PECTIN	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PHLOBAPHENE	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
4	PHOSPHORUS	Fruit	405	1450	-0.5364028420241324	
14	POTASSIUM	Fruit	3069	11000	-0.6119284601203993	
34	PROANTHOCYANIDINS	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
11	PROCYANIDIN	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
11	PROCYANIDIN	Leaf	--	--		
1	PROCYANIDIN-B-2	Fruit	--	--		
1	PROCYANIDIN-B-2	Flower	--	--		
4	PROCYANIDIN-B-4	Flower	--	--		
0	PROCYANIDIN-B-5	Flower	--	--		
0	PROCYANIDIN-C-1	Flower	--	--		
0	PROTEIN	Fruit	3906	14000	-1.2801994554298393	
6	PYCGNOGENOL	Shoot	10000	30000		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
176	QUERCETIN	Flower	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
176	QUERCETIN	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
176	QUERCETIN	Shoot	--	--		
0	QUERCETIN-3-RHAMNOGALACTOSIDE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	QUERCETIN-3-RHAMNOGALACTOSIDE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	QUERCETIN-GLYCOSIDE	Plant	--	--		Schussler, M., Fricke, U., Nikolov, N., and Holzl, J. 1991. Comparison of the Flavonoids Occurring in Crataegus species and Inhibition of 3',5'-Cyclic Adenosine Monophosphate Phosphodiesterase. Plant Medica 57: Suppl Issue 2. p.A-133.
44	QUERCITRIN	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	RHAMNOSE	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
15	RIBOFLAVIN	Fruit	--	--		
87	RUTIN	Plant	--	--		
87	RUTIN	Leaf	--	--		
87	RUTIN	Flower	--	--		
87	RUTIN	Bud	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	SAPONINS	Fruit	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. <i>Herbal Medicine - A Guide for Health-care Professionals</i> . The Pharmaceutical Press, London. 296pp.
60	SELENIUM	Fruit	0.6	2	0.10976555089417979	
4	SILICON	Fruit	--	--		
1	SODIUM	Fruit	15	55	-0.17873519822623876	
11	SORBITOL	Leaf	--	--		List, P.H. and Horhammer, L., Hager's <i>Handbuch der Pharmazeutischen Praxis</i> , Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
4	SPIRAEOSIDE	Leaf	--	--		Bisset, N.G., ed. 1994. <i>Herbal Drugs and Phytopharmaceuticals</i> . CRC Press. Boca Raton, FL. 566 pp.
5	STARCH	Fruit	41850	180000	-0.18166262454346976	
8	STEARIC-ACID	Bark	--	--		
14	SUCROSE	Bark	--	--		
0	SUGAR	Fruit	350000	350000	1.0965198301112378	List, P.H. and Horhammer, L., Hager's <i>Handbuch der Pharmazeutischen Praxis</i> , Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	SUGARS	Fruit	33480	120000	-0.388868598447453	
0	TANNINS	Flower	--	--		
6	TARTARIC-ACID	Bark	--	--		
6	TARTARIC-ACID	Fruit	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
31	THIAMIN	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	THIAMINE	Fruit	--	--		
4	TIN	Fruit	3.6	13	-0.3261703903199725	
0	TRANS-CRATAEGOLIC-ACID	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	TRIMETHYLAMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
1	TRIMETHYLAMINE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
11	TYRAMINE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
11	TYRAMINE	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
11	TYRAMINE	Flower	--	--		
0	URIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	URIC-ACID	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
89	URSOLIC-ACID	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
89	URSOLIC-ACID	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
89	URSOLIC-ACID	Shoot	--	--		
18	VITEXIN	Fruit	--	--		
18	VITEXIN	Flower	--	--		
18	VITEXIN	Branches	--	--		
18	VITEXIN	Shoot	--	--		
18	VITEXIN	Leaf	--	--		
18	VITEXIN	Bark	--	--		
18	VITEXIN	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
1	VITEXIN-2"-O-ALPHA-L-RHAMNOSIDE	Plant	--	--		
1	VITEXIN-2'-O-RHAMNOSIDE	Flower	--	--		
0	VITEXIN-2'-RHAMNOSIDE	Leaf	--	--		
0	VITEXIN-2'-RHAMNOSIDE	Fruit	--	--		
0	VITEXIN-4',7-DI-D-GLUCOSIDE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	VITEXIN-4',7-DI-D-GLUCOSIDE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	VITEXIN-4',L-RHAMNO-D-GLUCOSIDE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	VITEXIN-4',L-RHAMNO-D-GLUCOSIDE	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	VITEXIN-4'-L-RHAMNOSIDE	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	VITEXIN-4'-O-ALPHA-L-RHAMNOSIDE	Shoot	--	--		
0	VITEXIN-4'-RHAMNOSIDE	Flower	--	--		
0	VITEXIN-4'-RHAMNOSIDE	Branches	--	--		
0	VITEXIN-4'-RHAMNOSIDE	Leaf	--	--		
0	VITEXIN-4'-RHAMNOSIDE	Fruit	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	VITEXIN-4'-RHAMNOSIDE	Bark	--	--		
0	VITEXIN-RHAMNOSIDE	Flower	--	--		
0	VITEXIN-RHAMNOSIDE	Leaf	--	--		

<b>Activity Count</b>	<b>Chemical</b>	<b>Plant Part</b>	<b>Low PPM</b>	<b>High PPM</b>	<b>StdDev</b>	<b>Reference Citation</b>
0	VITEXIN-RHAMNOSIDE	Plant	--	--		Schussler, M., Fricke, U., Nikolov, N., and Holzl, J. 1991. Comparison of the Flavonoids Occurring in Crataegus species and Inhibition of 3',5'-Cyclic Adenosine Monophosphate Phosphodiesterase. Plant Medica 57: Suppl Issue 2. p.A-133.
0	WATER	Fruit	--	721000	-0.2155599430292297	
77	ZINC	Fruit	--	--		
77	ZINC	Flower	--	--		